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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/768,438

01/29/2004

Naoyuki Enjoji

TOW-063

8750

959 7590 01/19/2007
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EXAMINER

CREPEAU, JONATHAN

ART UNIT

PAPER NUMBER

1745

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

01/19/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	10/768,438	ENJOJI ET AL.	
	Examiner	Art Unit	
	Jonathan S. Crepeau	1745	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 04 January 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) 11-18 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-9 is/are rejected.
- 7) ☒ Claim(s) 4 and 10 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. Figure 18 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Election/Restrictions

2. Applicant's election of Group I in the reply filed on January 4, 2007 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by WO 02/080299. Fujii et al, U.S. Patent 7,081,317 is taken as an English-language equivalent of WO '299 herein. In Figure 10, Fujii et al. '317 teaches a plurality of fuel cells (X, Y), each comprising a plurality of power generation units (50) arranged on a same plane and connected in series. A switching mechanism selectively connects the fuel cells in a series or parallel configuration with a load (see column 10, line 47 et seq.).

Thus, the instant claim is anticipated.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 5-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO '299.

Fujii et al. is applied for the reasons stated above. However, the reference does not expressly teach that a plurality of fuel cell units are stacked together as recited in claim 5. The reference further does not expressly teach fuel and oxygen supply mechanisms having a valve (claim 6), or having first and second pumps connected in parallel (claim 7).

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However, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the reference would sufficiently guide the artisan to stack the fuel cells. In column 12, line 45, the reference teaches the following:

45 In this example, series-parallel switching was performed
for two cell blocks; however, the number of cell blocks for
which the switching is performed is not limited to two, and
the switching may be performed for three or more plural cell
blocks. In addition, although the cell blocks were formed on
50 a same substrate in this example, a similar result can be
achieved when they are formed on different substrates.

Thus, the reference contemplates configurations comprising a plurality of fuel cells, and as such, the artisan would be sufficiently skilled to stack the fuel cells as recited in claim 5.

Regarding the limitations in claims 6 and 7 directed to valves and pumps, it would be well within the skill of the art to include such devices in the reactant supply systems of Fujii et al. In particular, it would be advantageous to be able to precisely control reactant flow to a specific fuel cell depending on whether that fuel cell was connected in series or parallel. Accordingly, the use of valves and pumps operable with the switching system is considered to be obvious to the skilled artisan.

Further, it would be obvious to include a coolant flow configuration for supplying coolant in parallel to the fuel cells, as recited in claims 8 and 9. Fujii et al. recognize the need for a coolant system in column 1, line 60. It would be obvious to provide a coolant system structured in a similar way to the reactant systems in Fujii et al. in order to efficiently remove heat from the fuel cells.

7. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO '299 in view of Adams et al (U.S. Patent 7,038,424).

Fujii et al. is applied for the reasons stated above, but does not expressly teach that each of the fuel cells is connected to a variable resistor as recited in claim 2.

Adams et al. is directed to a method and apparatus for rejuvenating fuel cells. In Figure 2B, the reference teaches a plurality of fuel cells (125, 127), each connected to a variable resistor (VR1, VRN).

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to use the variable resistors of Adams et al. in the system of Fujii et al. As disclosed in the abstract of Adams et al., the variable resistors are used to control the current in the fuel cell, and thereby electrocatalyst poisons on the anode and cathode can be removed. Accordingly, the artisan would be motivated to use the variable resistors of Adams et al. in the system of Fujii et al.

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over WO '299 in view of Fuglevand (U.S. Patent 6,497,974).

Fujii et al. is applied for the reasons stated above, but does not expressly teach that the switching mechanism is capable of connecting different numbers of the power generation units in series, as recited in claim 3.

In Figure 4, Fuglevand teaches a system comprising a plurality of power generation units (12a-12i) that are connected to switching circuitry and are capable of serial or parallel connection.

Therefore, the invention as a whole would have been obvious to one of ordinary skill in the art at the time the invention was made because the artisan would be motivated to provide the capability in the system of Fujii of selectively connecting or disconnecting individual power generation units in series. In column 11, line 12, Fuglevand teaches that “in this embodiment of the invention, the switching circuitry 62 couples a desired number of modules together in series (and/or in parallel) depending on the load requirements.” As such, an artisan would be motivated to provide the capability in the system of Fujii of selectively connecting or disconnecting individual power generation units in series, in order to provide greater flexibility in meeting load requirements.

Allowable Subject Matter

9. Claims 4 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

10. The following is a statement of reasons for the indication of allowable subject matter:

Claims 4 and 10 each recite that a pair of metal diffusion layers is provided on both surfaces of the power generation units, and a resin insulator is provided in the diffusion layers

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between predetermined power generation units. Fujii et al. do not teach or fairly suggest this configuration.

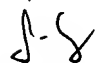
Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jonathan Crepeau whose telephone number is (571) 272-1299.

The examiner can normally be reached Monday-Friday from 9:30 AM - 6:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan, can be reached at (571) 272-1292. The phone number for the organization where this application or proceeding is assigned is (571) 272-1700. Documents may be faxed to the central fax server at (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Jonathan Crepeau
Primary Examiner
Art Unit 1745
January 17, 2007